IN THE CLAIMS:

The following is a complete listing of claims subsequent to the Examiner's Amendment of on or about March 11, 2009, and replaces all prior versions and listings of claims in the present application:

1. (Previously Presented) Method of coding information symbols according to a code defined on a Galois field F_q, where q is an integer greater than 2 and equal to a power of a prime number, and of length $n = p(q\text{-}1)$, where p is an integer greater than 1, comprising steps of:

a) choosing a p-tuple of integers $(t_1,...,t_p)$ such that

$q\text{-}1 > t_1 > t_2 > ... > tp > 0$,

and a p-tuple of diagonal square matrices $(Y_1,...,Y_p)$ of dimension $(q\text{-}1)$ on F_q such that, for any i $(1 \leq i \leq q\text{-}1)$, p elements in position (i,i) of these matrices $Y_1,...,Y_p$ are different in pairs,

b) placing the information symbols successively in p words a_l of length $(q\text{-}1\text{-}\ t_l)$ (where $l = 1, ... ,p$),

c) forming words $\underline{u}_l$ (where $l = 1, ... ,p$) of length $(q\text{-}1)$, which constitute components of a precoded word $\underline{u} = [\underline{u}_1\ \underline{u}_2 ... \underline{u}_p]$, by supplementing the corresponding word $\underline{a}_l$ by means of redundant symbols so that $\underline{u}_l$ is orthogonal to a matrix $H^{(t_l)}$, where matrices $H^{(t)}$ are defined by $H^{(t)}_{ij} = \gamma^{i(j\text{-}1)}$ $(1 \leq i \leq t,\ 1 \leq j \leq q\text{-}1)$, where γ is a symbol chosen from amongst primitive elements of F_q, and

d) forming a code word

$\underline{v} = [\underline{v}_1\ \underline{v}_2 \cdots \underline{v}_p]$

where each word $\underline{v}_l$ ($l = 1,\ldots,p$) is of length (q-1), by resolving a system of equations

$$\begin{cases} \underline{v}_1 + \underline{v}_2 + \ldots + \underline{v}_p = \underline{u}_1 , \\ \underline{v}_1 Y_1 + \underline{v}_2 Y_2 + \ldots + \underline{v}_p Y_p = \underline{u}_2 , \\ \underline{v}_1 Y^2{}_1 + \underline{v}_2 Y^2{}_2 + \ldots + \underline{v}_p Y^2{}_p = \underline{u}_3 , \\ \ldots \\ \underline{v}_1 Y_1^{p-1} + \underline{v}_2 Y_2^{p-1} + \ldots + \underline{v}_p Y_p^{p-1} = \underline{u}_p . \end{cases}$$

2. (Previously Presented) The method of coding according to Claim 1, in which an algebraic equation in X and Y is considered such that, for any value γ^{i-1} ($i = 1,\ldots,q$-1) taken by X, the algebraic equation has p distinct solutions denoted y_l (γ^{i-1}) (where $l = 1,\ldots,p$), and a diagonal element in position (i,i) of each of the matrices Y_l is taken to be equal to $y_l(\gamma^{i-1})$.

3. (Previously Presented) The method of coding according to Claim 1, in which each word $\underline{a}_l$ (where $l = 1,\ldots,p$) represents a respective approximation of resolution of an image coded at a source.

4. (Previously Presented) The method of coding according to Claim 1, further comprising steps of:

e) calculating, from a word

$$\underline{r} = \left[\underline{r}_1 \, \underline{r}_2 \ldots \underline{r}_p\right],$$

where each word $\underline{r}_l$ ($l = 1,\ldots,p$) is of length (q-1), at least one of components $\underline{s}_l$ (where $l = 1,\ldots,p$) of length (q-1), of post-received word $s = [\underline{s}_1\ \underline{s}_2 \ldots \underline{s}_p\ ]$, according to:

$$\begin{cases} \underline{s}_1 = \underline{r}_1 + \underline{r}_2 + \ldots + \underline{r}_p, \\ \underline{s}_2 = \underline{r}_1 Y_1 + \underline{r}_2 Y_2 + \ldots + \underline{r}_p Y_p, \\ \underline{s}_3 = \underline{r}_1 Y^2{}_1 + \underline{r}_2 Y^2{}_2 + \ldots + \underline{r}_p Y^2{}_p, \\ \qquad\qquad \ldots \\ \underline{s}_p = \underline{r}_1 Y_1^{p-1} + \underline{r}_2 Y_2^{p-1} + \ldots + \underline{r}_p Y_p^{p-1}, \end{cases}$$

and

f) calculating at least one of components $\underline{\hat{u}}_l$ [(where $l = 1,\ldots,p$) of length (q-1), of a post-associated word $\underline{\hat{u}} = [\underline{\hat{u}}_l\ \underline{\hat{u}}_2 \ldots \underline{\hat{u}}_p\ ]$, and correcting the component $\underline{s}_l$ with the same l according to an error syndrome vector $H^{(tl)} \cdot \underline{s}_l^T$.

5. (Previously Presented) The method of coding according to Claim 2, further comprising steps of:

e) applying a maximal error correction algorithm to each received word $\underline{r}$, so as to obtain an estimation

$$\hat{v} = \left[\underline{\hat{v}}_1\, \underline{\hat{v}}_2\, \cdots\, \underline{\hat{v}}_p\right],$$

where each word $\underline{\hat{v}}_l$ ($l = 1, \ldots ,p$) is of length (q-1), of the corresponding word $\underline{v}$, and

f) calculating at least one of components $\underline{\hat{u}}$ (where $l = 1,\ldots,p$), of length (q-1), of a post-associated word $\underline{\hat{u}} = [\underline{\hat{u}}_1\ \underline{\hat{u}}_2 \ldots \underline{\hat{u}}_p]$, according to:

$$\begin{cases} \underline{\hat{u}}_1 = \underline{\hat{v}}_1 + \underline{\hat{v}}_2 + \ldots + \underline{\hat{v}}_p \,, \\ \underline{\hat{u}}_2 = \underline{\hat{v}}_1 Y_1 + \underline{\hat{v}}_2 Y_2 + \ldots + \underline{\hat{v}}_p Y_p \,, \\ \underline{\hat{u}}_3 = \underline{\hat{v}}_1 Y^2_1 + \underline{\hat{v}}_2 Y^2_2 + \ldots + \underline{\hat{v}}_2 Y^2_p \\ \qquad\qquad\qquad \ldots \\ \underline{\hat{u}}_p = \underline{\hat{v}}_1 Y^{p-1}_1 + \underline{\hat{v}}_2 Y^{p-1}_2 + \ldots + \underline{\hat{v}}_p Y^{p-1}_p \,. \end{cases}$$

6.-10. (Canceled)

11. (Previously Presented) A device for coding information symbols according to a code defined on a Galois field F_q, where q is an integer greater than 2 and equal to a power of a prime number, and of length $n = p(q\text{-}1)$, where p is an integer greater than 1, in which a p-tuple of integers $(t_1,\ldots,t_p)$ such that

$q\text{-}1 > t_1 > t_2 > \ldots > t_p > 0$,

and a p-tuple of diagonal square matrices $(Y_1,\ldots,Y_p)$ of dimension (q-1) on F_q such that, for any i ($1 \leq i\ q\text{-}1$), p elements in position (i,i) of these matrices $Y_1,\ldots,Y_p$ are different in pairs, having been chosen, it is able to:

place the information symbols successively in p words $\underline{a}_l$ of length $(q\text{-}1\text{-}\ t_l)$ (where $l = 1,\ldots,p$),

form words $\underline{u}_l$ (where $l = 1,\ldots,p$) of length (q-1), which constitute components of a precoded word $\underline{u} = [\underline{u}_1\ \underline{u}_2\ \ldots\ \underline{u}_p]$, supplementing the corresponding word a_l by means of redundant symbols so that u_l is orthogonal to a matrix $H^{(tl)}$, where matrices $H^{(t)}$ are defined by

$H^{(t)}{}_{ij} = \gamma^{i(-1)}$ ($1 \leq i \leq t$, $1 \leq j \leq q\text{-}1$), where γ is a symbol chosen from amongst primitive elements of F_q, and

form a code word

$$\underline{v}=[\underline{v}_1\,\underline{v}_2\cdots\underline{v}_p],$$

where each word v_l ($l = 1, \ldots, p$) is of length (q-1), by resolving a system of equations

$$\begin{cases} \underline{v}_l & + & \underline{v}_2 & + & \ldots & + & \underline{v}_p & = & \underline{u}_l\,, \\ \underline{v}_1 Y_1 & + & \underline{v}_2 Y_2 & + & \ldots & + & \underline{v}_p Y_p & = & \underline{u}_2\,, \\ \underline{v}_1 Y^2{}_1 & + & \underline{v}_2 Y^2{}_2 & + & \ldots & + & \underline{v}_p Y^2{}_p & = & \underline{u}_3\,, \\ \underline{v}_1 Y_1^{p-1} & + & \underline{v}_2 Y_2^{p-1} & + & \ldots & + & \underline{v}_p Y_p^{p-1} & = & \underline{u}_p\,. \end{cases}$$

12. (Previously Presented) The device for coding according to Claim 11, wherein the device is also able to assign a value $y_l(\gamma^{i-1})$ to a diagonal element in position (i,i) of each of the matrices Y_l, where, for a predetermined algebraic equation in X and Y, the algebraic equation has p distinct solutions denoted $y_l(\gamma^{i-1})$ (where $l = 1, \ldots, p$) for any value γ^{i-1} ($i = 1, \ldots, q$-1) taken by X.

13. (Previously Presented) A device for decoding received words $\underline{r}$ resulting from a transmission of coded words $\underline{v}$, comprising:

an error correction unit able to apply an error correction algorithm to each of the received words r, so as to supply at least one component $\underline{\hat{u}}_l$ (where $l = 1, \ldots, p$) of a post-associated word $\underline{\hat{u}}$, and

a redundancy elimination unit able to remove from the at least one component $\underline{\hat{u}}_l$ symbols situated at positions identical to positions of the component $\underline{u}_l$ with the same l of a corresponding precoded word $\underline{u}$, in which redundant symbols were placed at a time of coding.

14. (Canceled)

15. (Previously Presented) An information data transmission apparatus comprising the device for coding according to Claim 11 and a modulator for modulating data resulting from coding the information symbols.

16. (Previously Presented) A data reception apparatus, comprising a demodulator for demodulating received data and the device for decoding according to Claim 13.

17. (Previously Presented) An information data transmission apparatus, comprising the device for coding according to Claim 11, an interleaver able to permute symbols of each code word

$\mathrm{v} = (v^0, v^1, \ldots, v^{n-1})$ so as to form a word to be transmitted

$$\underline{v}^* = \left(v^0, v^{q-1}, v^{2(q-1)}, \ldots, v^{(p-1)(q-1)}, v^1, v^q, v^{2q-1}, \ldots, v^{(p-1)(q-1)+1}, \ldots, v^{n-1}\right),$$

and a modulator for modulating symbols of said word to be transmitted $\underline{v}^*$.

18. (Previously Presented) A data reception apparatus, comprising a demodulator for demodulating received data so as to form interleaved received words

$$\underline{r}^* = \left(r^0, r^{q-1}, r^{2(q-1)}, \ldots, r^{(p-1)(q-1)}, r^1, r^q, r^{2q-1}, \ldots, r^{(p-1)(q-1)+1}, \ldots, r^{n-1}\right),$$

where q is an integer greater than 2 and equal to a power of a prime number, p an integer greater than 1, and $n = p(q-1)$, a deinterleaver for permuting symbols

of each interleaved received word $\underline{r}^*$ so as to form a received word $\underline{r} = (r^0, r^1, \ldots, r^{n-1})$, and the device for decoding according to Claim 13.

19.-21. (Canceled)

22. (Previously Presented) A method of decoding received symbols, comprising steps of:

determining a current state of transmission, including determining whether or not a mean transmission error rate exceeds a predetermined threshold;

selecting one of a plurality of available decoding algorithms in accordance with the current state of transmission determined in said determining step, including selecting a first decoding algorithm if the mean transmission error rate is determined to exceed the predetermined threshold and selecting a second decoding algorithm if the mean transmission error rate is determined not to exceed the predetermined threshold; and

decoding the received symbols by using the selected one of the plurality of available decoding algorithms.

23. (Canceled)

24. (Previously Presented) The decoding method according to Claim 22, wherein the second decoding algorithm is lower in performance but faster in processing than the first decoding algorithm.

25. (Previously Presented) The decoding method according to Claim 22, wherein the first decoding algorithm is a Feng-Rao algorithm.

26. (Previously Presented) The decoding method according to Claim 22, wherein the second decoding algorithm is an algorithm based on a Reed-Solomon code.

27. (Previously Presented) A device for decoding received symbols, comprising:

determination means for determining a current state of transmission, wherein the determining includes determining whether or not a mean transmission error rate exceeds a predetermined threshold;

selection means for selecting one of a plurality of available decoding algorithms in accordance with the current state of transmission determined by said determination means wherein the selecting includes selecting a first decoding algorithm if said mean transmission error rate is determined to exceed the predetermined threshold and selecting a second decoding algorithm if said mean transmission error rate is determined not to exceed the predetermined threshold; and

decoding means for decoding the received symbols by using the selected one of the plurality of available decoding algorithms.

28. (Previously Presented) A computer-readable medium having stored thereon sequences of instructions, the sequences of instructions including instructions

which when executed by a computer system cause the computer system to perform the following steps:

determine a current state of transmission, including determining whether or not a mean transmission error rate exceeds a predetermined threshold;

select one of a plurality of available decoding algorithms in accordance with the current state of transmission determined in said determining step, including selecting a first decoding algorithm if said mean transmission error rate is determined to exceed the predetermined threshold and selecting a second decoding algorithm if said mean transmission error rate is determined not to exceed the predetermined threshold; and

decode received symbols by using the selected one of the plurality of decoding algorithms.